


FORM PTO-1390		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371			4139-122
			U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 09/913575
INTERNATIONAL APPLICATION NO. PCT/DE00/00438	INTERNATIONAL FILING DATE 16 February 2000	PRIORITY DATE CLAIMED 18 February 1999	
TITLE OF INVENTION DEVICE AND METHOD FOR FLUORESCENCE CORRELATION SPECTROSCOPY, ESPECIALLY FOR MULTI-COLOUR FLUORESCENCE CORRELATION SPECTROSCOPY			
APPLICANT(S) FOR DO/EO/US Jorg Langowski			
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:			
<ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). 4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input checked="" type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)). 7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) <ol style="list-style-type: none"> a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). b. <input type="checkbox"/> have been transmitted by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input checked="" type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).*(Unsigned) 10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). 			
Items 11. to 16. below concern other document(s) or information included:			
<ol style="list-style-type: none"> 11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 14. <input type="checkbox"/> A substitute specification. 15. <input checked="" type="checkbox"/> A small entity statement. 16. <input checked="" type="checkbox"/> Other items or information: EPO Search Report in German, Amended claims under PCT Rule 66 			

NOTE: This application is being filed with an unsigned Oath or Declaration under the provisions of 37 CFR § 1.53 in order that applicant may secure a filing date of August 13, 2001. Upon receipt of a "Notice to File Missing Parts - Filing Date Granted," a executed Declaration and Power of Attorney will be forwarded. The undersigned agent affirmatively states that she has been duly authorized and appointed to file this application on behalf of the applicant and applicant's assignee, and that the Declaration and Power of Attorney to be filed hereafter will confirm the undersigned agent's authorization and appointment. Applicant is considered a small entity and assignee Deutsches Krebsforschungszentrum is also considered a small entity within the meaning of 37 CFR § 1.9.

17. <input checked="" type="checkbox"/> The following fees are submitted:				CALCULATIONS		PTO USE ONLY	
Basic National Fee (37 CFR 1.492(a)(1)-(5)): Search Report has been prepared by the EPO or JPO\$860.00 International preliminary examination fee paid to USPTO (37 CFR 1.482)\$0.00 No International preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))\$0.00 Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO\$1000.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)\$0.00							
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$	860.00		
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$			
Claims	Number Filed	Number Extra	Rate				
Total Claims	14-20 =	0	X \$18.00	\$			
Independent Claims	2-3 =	0	X \$80.00	\$			
Multiple dependent claim(s) (if applicable)			+ \$270.00	\$			
TOTAL OF ABOVE CALCULATIONS =					860.00		
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SUBTOTAL =				\$	430.00		
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TOTAL NATIONAL FEE =				\$	430.00		
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$			
TOTAL FEE ENCLOSED =				\$	430.00		
				Amount to be:	\$		
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a. <input checked="" type="checkbox"/> A check in the amount of \$430.00 to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 08-3284. A duplicate copy of this sheet is enclosed.							
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not yet been met, a petition to revive (37 CFR 1.127(a) or (b)) must be filed and granted to restore the application to pending status.							
SEND ALL CORRESPONDENCE TO:				 MARIANNE FUIERER Registration No. 39,983			
Steven J. Hultquist Intellectual Property/Technology Law P. O. Box 14329 Research Triangle Park, NC 27709							

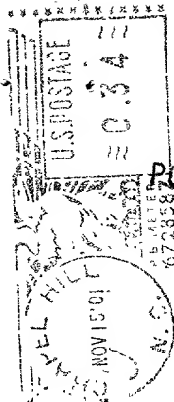
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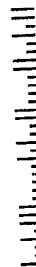
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**Commissioner for Patents
Washington DC 20231**



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PCT

#4/3

4139-122
PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Jorg Langowski

Application No.: 09/913,575

International Application No.: PCT/DE00/00438

Priority Date Claimed: 16 February 2000 and 18 February 1999
(German Appl. No. 199 07 011.3)

Title: **DEVICE AND METHOD FOR
FLUORESCENCE CORRELATION
SPECTROSCOPY, ESPECIALLY FOR
MULTI-COLOUR FLUORESCENCE
CORRELATION SPECTROSCOPY**

FIRST CLASS MAIL CERTIFICATE

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November 15, 2001

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SUPPLEMENTAL PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified national phase patent application, please amend the application, as follows:

In the Specification

Please insert on page 1 between the title of the application and the first paragraph the following new paragraph:

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is filed under the provisions of 35 U. S.C. §371 and claims the priority of International Patent Application No. PCT/DE00/00438 filed February 16, 2000, which in turn claims priority of German Patent Application No. 199 07 011.3 filed on February 18, 1999.

REMARKS

This claim to priority is being filed before the above-identified application meets all the requirements under 35 U.S.C. §371(b).

Respectfully submitted,



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Fig. 1

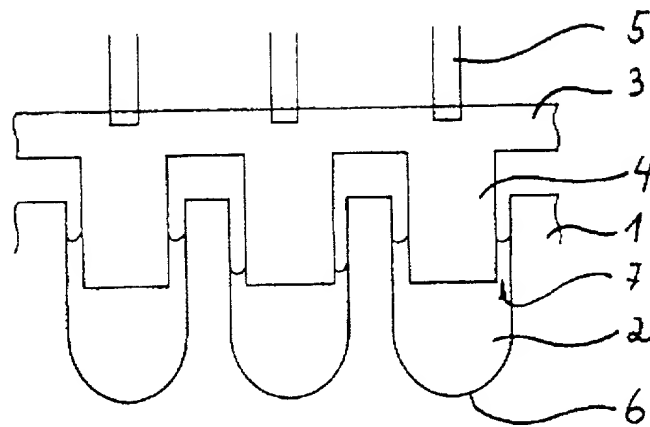
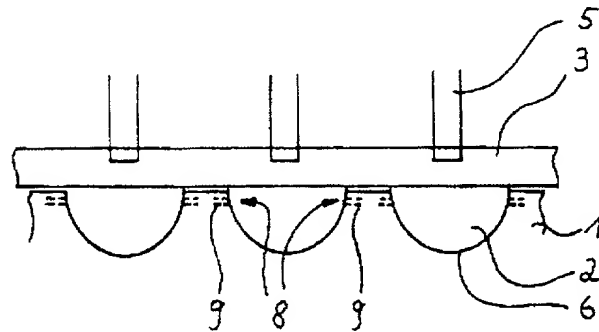


Fig. 2



09/913575

518 Rec'd PCT/PTO 13 AUG 2001

4139-122
PATENT APPLICATION

#3/a

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Jorg Langowski

Application No.: New U.S. National Stage Application of
PCT International Application No.
PCT/DE00/00438

International Filing Date: 16 February 2000

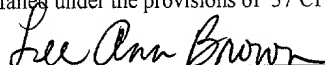
Priority Date Claimed: 18 February 1999 (German Appl. No. 199 07
011.3)

U.S. National Phase Filing Date: Date of mailing identified below

Title: **DEVICE AND METHOD FOR
FLUORESCENCE CORRELATION
SPECTROSCOPY, ESPECIALLY FOR
MULTI-COLOUR FLUORESCENCE
CORRELATION SPECTROSCOPY**

EXPRESS MAIL CERTIFICATE

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Lee Ann Brown

August 13, 2001
Date

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PRELIMINARY AMENDMENT

Commissioner for Patents
BOX PATENT APPLICATION
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified new national phase patent application, please amend the application, as follows:

In the Claims

Please amend claims 1-10 to read as follows:

1. A device for fluorescence correlation spectroscopy, especially a device for multicolour fluorescence correlation spectroscopy, in which light rays are focussed in a transparent medium which is located in a sample vessel, characterised by a vessel holder in which at least two sample vessels with a focussing reflection-coated bottom are provided, and a common cover for both sample vessels which is at least partly transparent to light and has at least two plungers which each protrude into a sample vessel.
2. The device according to Claim 1, wherein the sample vessels are formed by recesses in the vessel holder.
3. The device according to Claim 1, wherein the focus lies inside the sample vessel.
4. The device according to Claim 1, wherein each sample vessel exhibits pressure equalisation.
5. The device according to Claim 1, wherein at least one plunger has dimensions such that between the plunger and the sample vessel there remains a gap surrounding the plunger for pressure equalization within the vessel.
6. The device according to claim 1, wherein at least one plunger has a surface region perpendicular to the optic axis of the focussing bottom of the sample vessel.

7. The device according to claim 4, wherein the wall of the sample vessel has an opening which opens into a supply and/or drain pipe for the transparent medium.
8. A method for fluorescence correlation spectroscopy, comprising:

providing a sample vessel having a reflecting focussing bottom;

inserting a plunger with a light window facing the focussing bottom;

focusing light rays in a transparent medium which is located in the sample vessel wherein the quantity of the transparent medium is selected so that the light window of the plunger is wetted by the medium.
9. The method according to Claim 8, wherein the plunger is inserted to a position above the focus of the bottom.
10. The method according to Claim 9, wherein the plunger is immersed in the transparent medium.

Please add claims 11-12.

11. The device according to claim 1, wherein the bottom of the sample vessel is a parabolic shape.
12. The device according to claim 1, wherein the light rays are aligned perpendicular to the bottom of the sample vessel.
13. The method according to claim 8, wherein the bottom of the sample vessel is a parabolic shape.

14. The method according to claim 13, wherein the light rays are aligned to enter into the sample vessel perpendicular to the bottom of the sample vessel for focussing within the sample vessel.

REMARKS

A marked-up version of amended paragraph in the specification and amended claims 1-10 are included herewith in Appendix A.

It is requested that the examination and prosecution of this application proceed on the basis of the English translation of the PCT International application included herewith and these amended claims 1-12.

Respectfully submitted,



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APPENDIX A

1. A device [Device] for fluorescence correlation spectroscopy, especially a device for multicolour fluorescence correlation spectroscopy, in which light rays are focussed in a transparent medium which is located in a sample vessel [(2)], characterised by a vessel holder [(1)] in which at least two sample vessels [(2)] with a focussing reflection-coated bottom [(6)] are provided, and a common cover [(3)] for both sample vessels [(2)] which is at least partly transparent to light and has at least two plungers [(4)] which each protrude into a sample vessel [(2)].
2. The device [Device] according to Claim 1, [characterised in that] wherein the sample vessels [(2)] are formed by recesses in the vessel holder [(1)].
3. The device [Device] according to Claim[s] 1 [or 2], [characterised in that] wherein the focus lies inside the sample vessel [(2)].
4. The device [Device] according to Claim 1, [one of Claims 1 to 3, characterised in that] wherein each sample vessel [(2)] exhibits pressure equalisation.
5. The device [Device] according to [one of] Claim[s] 1 [to 4, characterised in that], wherein at least one plunger [(4)] has dimensions such that between the plunger [(4)] and the sample vessel [(2)] there remains a gap [(7)] surrounding the plunger [(4)] for pressure equalization within the vessel.
6. The device [Device] according [to one of Claims 1 to 5, characterised in that] to claim 1, wherein at least one plunger [(4)] has a surface region perpendicular to the optic axis of the focussing bottom of the sample vessel [(6)].
7. The device [Device] according to [one of Claims 1 to 6, characterised in that] claim 4, wherein [in] the wall of the sample vessel [(2)] there is provided] has an

opening [(8)] which opens into a supply and/or drain pipe for the transparent medium.

8. A method [Method] for fluorescence correlation spectroscopy, [especially a method for multicolour fluorescence correlation spectroscopy,] comprising:

providing a sample vessel having a reflecting focusing bottom;

inserting a plunger with a light window facing the focusing bottom;

focusing [in which] light rays [are focussed] in a transparent medium which is located in [a] the sample vessel [(2), characterised in that in]the sample vessel (2) which has a focussing bottom (6) there is inserted a plunger (4) with a light window facing the bottom (6)], wherein [and] the quantity of the transparent medium is selected so that the light window of the plunger [(4)] is wetted by the medium.

9. The method [Method] according to Claim 8, [characterised in that] wherein the plunger [(4)] is inserted to a position above the focus of the bottom [(6)].
10. The method [Method] according to Claim[s 8 or] 9, wherein [characterised in that] the plunger [(4)] is immersed in the transparent medium.

DEVICE AND METHOD FOR FLUORESCENCE CORRELATION
SPECTROSCOPY, ESPECIALLY FOR MULTICOLOUR FLUORESCENCE
CORRELATION SPECTROSCOPY

5 The invention relates to a device and a method for
fluorescence correlation spectroscopy, especially for
multicolour fluorescence correlation spectroscopy. In this
method reaction partners are marked with fluorescent dyes
and allowed to diffuse freely in a liquid transparent
10 medium. Any fluctuations of the fluorescence intensity can
be detected by optical methods. In particular, in
multicolour fluorescence correlation spectroscopy molecular
interactions are investigated with two reaction partners
being marked with different fluorescent dyes. The reaction
15 partners produce fluctuations of the fluorescence intensity
as they diffuse through the transparent medium. If
predominantly correlated intensity fluctuations are
detected between the emission wavelengths of the two
fluorophors, this indicates complex formation between the
20 two partners.

Typically very small sample quantities are used for such
investigations since the spatial volumes to be investigated
are confined to a region of space in the immediate vicinity
25 of a focus to which light rays are focussed in the
transparent medium.

On the other hand, in order that fluorescence correlation
spectroscopy with all its advantages can have the widest
30 possible application, it is necessary that the
implementation of the measurement method should be as
uncomplicated and routine as possible.

The problem for the present invention is thus to make
35 available a generic device and a generic method for
fluorescence correlation spectroscopy, especially for
multicolour fluorescence correlation spectroscopy, which on

the one hand can be used for the routine implementation of measurements and on the other hand can also cope with very small sample quantities.

5 As a solution the invention proposes on the one hand a generic device which comprises a vessel holder in which at least two sample vessels with a focussing reflecting bottom are provided, and a common cover for both sample vessels which is at least partly transparent to light.

10

Such a device can also be fabricated in extremely small dimensions with sufficient precision so that very small sample volumes are available for a measurement inside such small sample vessels. In addition, the arrangement of
15 several sample vessels in one vessel holder means that these can easily be prepared for a measurement at the same time or shortly after one another. It is also possible to provide the corresponding measurement apparatus with a holding device or transporting device for the vessel holder
20 so that the contents of each sample vessel can be supplied for a measurement one after the other or even simultaneously without further expenditure. The arrangement according to the invention described in this manner thus, on the one hand, makes it possible to use extremely small
25 sample volumes according to the problem and, on the other hand, allows almost continuous sample preparation or measurements.

By means of the focussing reflecting bottom it is also
30 possible for the exciting light rays to be incident perpendicularly in the transparent medium and merely deflected to the focus inside the medium. By this means measurement errors caused by the different refractive indices and different frequencies of the incident light can
35 be avoided or reduced to a minimum.

Preferably the sample vessel is filled so far that it reaches the cover. This ensures that any light incident in the sample vessel merely depends on the sample geometry and not on any surface stresses of the transparent medium or similar.

The complete arrangement has a relatively simple design if the sample vessels are formed by recesses in the vessel holder. With such an arrangement it is possible to construct the vessel holder in one piece and by any suitable method insert recesses therein which serve as sample vessels. In this case only the bottom of these recesses should be constructed as focussing in a fashion according to the invention.

The bottom can have a parabolic or also an elliptical shape. A hemispherical shaped bottom is also feasible within certain limits.

In order to ensure that the reflection coating has long-term durability, the bottom can be reflection-coated with a layer resistant to normal buffer solutions.

In this case the focus of the sample vessel should be selected so that it lies inside the sample vessel. With such an arrangement there is no need for complex optics which preliminarily deflect the incident light in a suitable fashion whereby in particular the risk of measurement errors caused by different angles of refraction is reduced.

Pressure equalisation can be provided at each sample vessel. Such pressure equalisation on the one hand allows each sample vessel to be filled or emptied in an arbitrary fashion and/or on the other hand ensures that assemblies such as a cover or a light window provided in the cover can be immersed in the liquid contained in the sample vessel or

completely wetted by said liquid. As already explained at the beginning, this wetting or this immersion ensures that the surface direction of the liquid is not random but is determined by the surface of the cover or the surface of a light window. It is understood that such pressure equalisation can also be used independently of the other features of the device according to the invention advantageously for fluorescence correlation spectroscopy.

10 In the present context the term "light window" is understood as an assembly or a region of the cover through which light for fluorescence excitation is directed through the cover into an appropriate sample vessel.

15 For example, the cover can be formed as a plane-parallel plate which lies horizontally on the vessel holder and covers the sample vessels. In this case, however, there is usually the difficulty of completely filling the underlying vessels with the liquid medium such that at least the appropriate light windows are wetted. Relevant ways can be found by suitable methods such as seals, exact dosing and overcoming the adhesive and cohesive forces.

25 These problems can be avoided if there is provided on the cover a plunger which protrudes into each sample vessel. By means of the gap between the plunger and the walls of the sample vessel pressure equalisation can also take place so that the sample vessel no longer needs to be filled with the highest possible precision. Any air or too much transparent medium can be transferred to the sides. In particular, by means of simple measures such as, for example small channels or drain holes, transparent medium can be prevented from reaching neighbouring sample vessels.

35 Advantageously the light windows of the cover are in each case provided in the plungers.

The plunger can, on the one hand, be shaped in one piece with the cover. On the other hand it is possible for the plunger to be formed by the ends of light guide fibres which are connected to the cover and protrude through this
5 into the sample vessels.

Advantageously the plunger is dimensioned such that between it and the sample vessel there is a gap running around the plunger. This gap is selected to be sufficiently large so
10 that no transparent medium flows out from the sample vessel if the plunger is immersed in the sample vessel and reaches its measuring position. The space formed by this gap thus serves as a buffer which can equalise different filling quantities, especially within the limits of measurement
15 accuracy.

It is understood that such a plunger immersing in the sample vessel can also be used advantageously with an individual sample vessel for fluorescence correlation
20 spectroscopy regardless of the other features. Especially the sample vessel then does not need to be filled with an exactly measured filling volume. This is of great advantage especially with small sample quantities since it is all the more difficult to measure precise volumes with these. In
25 this respect, regardless of the other features, such a plunger also makes it possible to make measurements using extremely small sample quantities with relatively large tolerances and thus under relatively complicated and rapidly executable conditions.

30 The invention also proposes a method for fluorescence correlation spectroscopy, especially for multicolour fluorescence correlation spectroscopy, whereby light rays are focussed in a transparent medium which is located in a
35 sample vessel. In this case, in the sample vessel which has a focussing bottom there is inserted a plunger having a light window facing the bottom and the quantity of

transparent medium is selected so that the light window of the plunger is wetted by the medium.

Advantageously the plunger is only inserted to a position
5 above the focus in the sample vessel so that the light incident through the light window can be focussed through the bottom into the focus and there initiates a desired measurement, in the transparent medium.

10 The method turns out to be particularly simple if the plunger is immersed in the transparent medium. In this way sufficient wetting is ensured in any case.

If the plunger has a surface region perpendicular to the
15 optic axis of the focussing sample vessel bottom, this ensures in a simple design fashion that light incident through the plunger is not refracted unnecessarily. By this means errors caused by light of different frequencies are avoided.

20 It is understood that the geometric relationships discussed in the present context such as "perpendicular", "elliptical" and "parabolic" and similar need only be selected exactly within the limits of the desired
25 measurement accuracies for the fluorescence correlation spectroscopy. In particular, the bottom should be fabricated exactly to a fraction of the wavelengths used. Also the deviations of the cover, the plunger or the geometric position of the light window are to be selected
30 larger or smaller according to the wavelengths used.

It is also possible to provide an opening in the wall of the sample vessel which opens into a supply pipe and/or a drain pipe for the transparent medium. These pipes can be
35 provided for example by simple holes in the vessel holder. Likewise on the surface of the vessel holder directly below the cover there can be provided grooves which, when covered

by the cover, form such channels. These simple openings or channels in a vessel holder can easily be prepared even in the smallest geometries using already known technical methods. These pipes can be used on the one hand for
5 pressure equalisation and on the other hand for supply or removal of the transparent medium or other substances such as measuring substance or cleaning substances.

Since any design refinements such as capillary-like feeds
10 to the focus and similar are relinquished with these simple openings, these configurations can be implemented even with the smallest sample vessel sizes. These are also conducive to fast and serial implementation of fluorescence correlation spectroscopy whereby it is understood that
15 these openings can also be used advantageously independently of the number of sample vessels used and the presence of a cover.

Other advantages, aims and properties of the present
20 invention are explained using the description of the appended drawings which for example show two devices for fluorescence correlation spectroscopy according to the invention. In the drawings

25 Figure 1 is a schematic section through a first device according to the invention and

Figure 2 is a schematic section through a second device according to the invention.

30

The embodiment of the invention shown in Figure 1 has a vessel holder 1 in which recesses are inserted as sample vessels 2 (numbered as an example). This embodiment also comprises a cover 3 with transparent plungers 4 (numbered
35 as an example) which in the covered state protrude into the sample vessels 2.

On the opposite side of the cover 3 there are provided light guides 5 (numbered as an example) through which light can be passed through the plunger 4 into the sample vessels 2 and out from said vessels. It is understood that the
5 light guides 5 can also be provided instead of the plunger 4 and can protrude through the cover 3 into the sample vessel 2.

The bottom 6 (numbered as an example) of any one sample
10 vessel is formed so that it is focussing and is reflection-coated on its inside with a layer resistant to normal buffer solutions.

For operation of this device the sample vessels 2 are
15 filled with a transparent medium as required. This proceeds until after placing on the cover 3, the plungers 4 are each immersed in the transparent medium. In this respect the gap 7 (numbered as an example) between the sample vessel 2 and the plunger 4 is used for pressure equalisation and as an
20 intermediate store for excess transparent medium.

Since the lower side of the plunger 7 has a surface region perpendicular to the optic axis of the focussing bottom 6 of the sample vessel and the light from the light guide 5
25 passes almost perpendicularly through a light window located in this surface region into the sample vessel 2, the cover 3 does not need to be positioned very exactly with respect to the sample vessel 2. Slight sideways deviations are of no importance because of the parallel
30 incidence of the light and the bottom 6 selected to be suitably focussing.

In the embodiment shown in Figure 2 sample vessels 2 (numbered as an example) with focussing reflection-coated
35 bottoms 6 (numbered as an example) are provided in a vessel holder 1. On the vessel holder 1 there lies a cover 3 with a flat underside in which the light guides 5 (numbered as

an example) are inserted corresponding to the sample vessels. In addition in each sample-vessel wall there are provided openings 8 (numbered as an example) which open into supply or drain pipes 9 (numbered as an example).
5 These are used on the one hand for pressure equalisation or overflow and in this way prevent transparent medium from passing over the sample vessel wall into other sample vessels 2 when the cover 3 is put in place. When the cover 3 is in place, these pipes 9 can also be used to exchange
10 sample liquid or to flush the sample vessels 2.

The pipes 9 can on the one hand be prepared by holes (as shown). On the other hand, in the upper side of the vessel holder 1 there can be provided grooves which jointly with
15 the cover 3 form the pipes 9. It is feasible to provide one of the openings 8 in the bottom region of the sample vessel 2.

The diameters of the openings 8 and the pipes 9 and their
20 position are selected so that the sample vessels can be filled completely. As can be seen directly from Figure 2, it is also possible to pass the light guides 5 through the cover 3 into the sample vessels 2. Then it is no longer necessary to completely fill the sample vessels 2.

CLAIMS: (AMENDED SHEET)

1. Device for fluorescence correlation spectroscopy, especially a device for multicolour fluorescence correlation spectroscopy, in which light rays are focussed in a transparent medium which is located in a sample vessel (2), characterised by a vessel holder (1) in which at least two sample vessels (2) with a focussing reflection-coated bottom (6) are provided, and a common cover (3) for both sample vessels (2) which is at least partly transparent to light and has at least two plungers (4) which each protrude into a sample vessel (2).
2. Device according to Claim 1, characterised in that the sample vessels (2) are formed by recesses in the vessel holder (1).
3. Device according to Claims 1 or 2, characterised in that the focus lies inside the sample vessel (2).
4. Device according to one of Claims 1 to 3, characterised in that each sample vessel (2) exhibits pressure equalisation.
5. Device according to one of Claims 1 to 4, characterised in that at least one plunger (4) has dimensions such that between the plunger (4) and the sample vessel (2) there remains a gap (7) surrounding the plunger (4).
6. Device according to one of Claims 1 to 5, characterised in that at least one plunger (4) has a surface region perpendicular to the optic axis of the focussing bottom of the sample vessel (6).

7. Device according to one of Claims 1 to 6, characterised in that in the wall of the sample vessel (2) there is provided an opening (8) which opens into a supply and/or drain pipe for the transparent medium.

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8. Method for fluorescence correlation spectroscopy, especially a method for multicolour fluorescence correlation spectroscopy, in which light rays are focussed in a transparent medium which is located in a sample vessel (2), characterised in that in the sample vessel (2) which has a focussing bottom (6) there is inserted a plunger (4) with a light window facing the bottom (6) and the quantity of the transparent medium is selected so that the light window of the plunger (4) is wetted by the medium.

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9. Method according to Claim 8, characterised in that the plunger (4) is inserted to a position above the focus of the bottom (6).

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10. Method according to Claims 8 or 9, characterised in that the plunger (4) is immersed in the transparent medium.

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Fig. 1

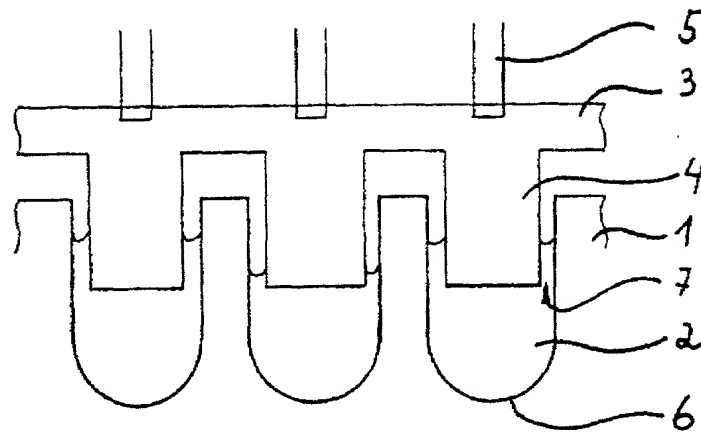
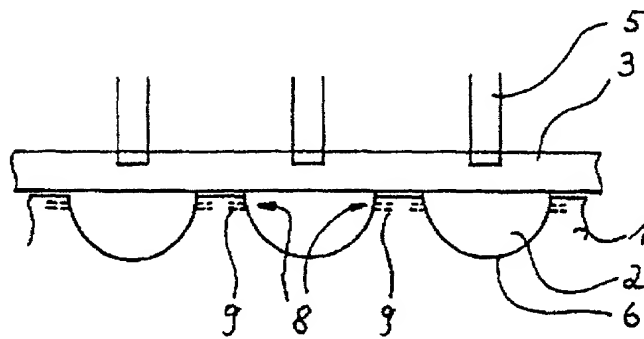


Fig. 2



PATENT APPLICATION

DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION

ATTORNEY DOCKET NO. 4139-122

As a below named inventor, I hereby declare that:

My residence/post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter, which is claimed and for which a patent is sought on the invention entitled:

DEVICE AND METHOD FOR FLUORESCENCE CORRELATION SPECTROSCOPY, ESPECIALLY FOR MULTI-COLOUR FLUORESCENCE CORRELATION SPECTROSCOPY

the specification of which is attached hereto unless the following box is checked:

(X) was filed on August 13, 2001 as US Application Serial No. 09/913575 or PCT International Application

Number _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understood the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose all information which is material to patentability as defined in 37 CFR 1.56.

Foreign Application(s) and/or Claim of Foreign Priority

I hereby claim foreign priority benefits under Title 35, United States Code Section 119(a-d) or 365(b) of any foreign application(s) for patent or inventor(s) certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor(s) certificate having a filing date before that of the application on which priority is claimed

COUNTRY	APPLICATION NUMBER	DATE FILED	PRIORITY CLAIMED UNDER 35 U S C 119
Germany	199 07 011.3	18 February 1999	YES <u>X</u> NO <u> </u>
PCT	PCT/DE00/00438	16 February 2000	YES <u>X</u> NO <u> </u>

Provisional Application

I hereby claim the benefit under Title 35, United States Code Section 119(e) of any United States provisional application(s) listed below

U.S. Priority Claim

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

APPLICATION SERIAL NUMBER	FILING DATE	STATUS(patented/pending/abandoned)

POWER OF ATTORNEY:

I, a named inventor, I hereby appoint the following attorney(s) and/or agent(s) listed below to prosecute this application and transact all business in the Patent and Trademark Office connected therewith

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon

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Inventor's Signature

Date

25. Okt 01